

SERVICE MANUAL

This Manual has been prepared for and is considered part of -

1300A Telescoping Crane

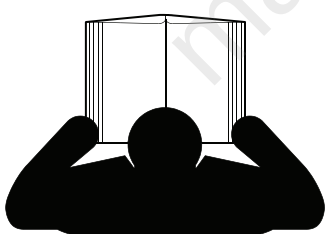
This Manual is Divided into the following Sections:

SECTION 1	INTRODUCTION
SECTION 2	HYDRAULIC SYSTEM
SECTION 3	ELECTRIC SYSTEM
SECTION 4	BOOM MAINTENANCE
SECTION 5	WINCH
SECTION 6	SWING
SECTION 7	OUTRIGGERS
SECTION 8	LUBRICATION
SECTION 9	CRANE INSTALLATION
SECTION 10	SCHEMATICS

NOTICE

The crane serial number is the only method your distributor or the factory has of providing you with correct parts and service information.

The crane serial number is identified on the builder's decal attached to the crane frame. ***Always furnish crane serial number*** when ordering parts or communicating service problems with your distributor or the factory.



WARNING

To prevent death or serious injury:

- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. National Crane is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Rating Plate supplied with crane.
- If Operator's Manual or Capacity Charts are missing from crane, contact your distributor for new ones.

Bearings

Antifriction Bearings

When an antifriction bearing is removed, cover it to keep out dirt and abrasives. Wash bearings in non-flammable cleaning solution and allow them to drain dry. The bearing may be dried with compressed air BUT do not spin the bearing. Discard the bearings if the races and balls or rollers are pitted, scored, or burned. If the bearing is serviceable, coat it with oil and wrap it in clean waxed paper. Do not unwrap new bearings until time of installation. The life of an antifriction bearing is shortened if not properly lubricated. Dirt can cause an antifriction bearing to lock and result in the shaft turning in the inner race or the outer race turning within the cage.

Double Row, Tapered Roller

Double row, tapered roller bearings are precision fit during manufacture and components are not interchangeable. The cups, cones, and spacers are etched with the same serial number and letter designator. If no letter designators are found, wire the components together to assure correct installation. Reusable bearing components should be installed in their original positions.

Heating Bearings

Bearings which require expansion for installation should be heated in oil not to exceed 121 °C (250 °F). When more than one part is heated to aid in assembly, they must be allowed to cool and then pressed together again. Parts often separate as they cool and contract.

Installation

Lubricate new or used bearings before installation. Bearings that are to be preloaded must have a film of oil over the entire assembly to obtain accurate preloading. When installing a bearing, spacer, or washer against a shoulder on a shaft, be sure the chamfered side is toward the shoulder.

When bearings are pressed into a retainer or bore, apply pressure to the outer race uniformly. If the bearing is pressed on the shaft, apply pressure on the inner race uniformly.

Preload

Preload is an initial load placed on the bearing at the time of assembly. Consult the disassembly and assembly instructions to determine if the bearing can be preloaded.

Be careful in applying preload to bearings requiring end clearance. Otherwise, bearing failure may result.

Sleeve Bearings

Do not install sleeve bearings with a hammer. Use a press and be sure to apply the pressure directly in line with the bore. If it is necessary to drive on a bearing, use a bearing

driver or a bar with a smooth flat end. If a sleeve bearing has an oil hole, align it with the oil hole in the mating part.

Gaskets

Be sure the holes in the gaskets correspond with the lubricant passages in the mating parts. If it is necessary to make gaskets, select material of the proper type and thickness. Be sure to cut holes in the right places. Blank gaskets can cause serious damage.

Hydraulic Systems



DANGER

Pressurized hydraulic fluid can cause serious injury. Depressurize the hydraulic system before loosening fittings.

Visual Inspection

Do a visual inspection daily on all hydraulic components for missing hose clamps, shields, guards, excessive dirt build up, and leaks. Do a monthly or 250 hour inspection for the items listed in the inspection procedure below.

Valves and Manifolds

Inspect valves and manifolds for leaking ports or sections.

Hoses and Fittings

Inspect all hoses and fittings for the following:

- Cut, kinked, crushed, flattened, or twisted hoses.
- Leaking hoses or fittings.
- Cracked, blistered, or hoses charred by heat.
- Damaged or corroded fittings.
- Fitting slippage on hoses.

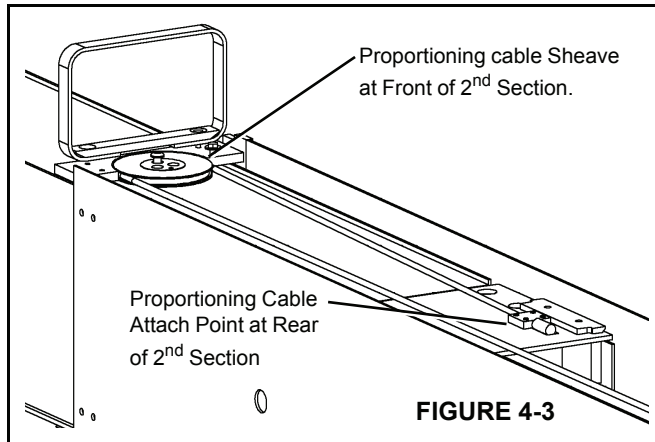
If any the above conditions exist, evaluate and replace as necessary.

The climate in which the crane operates affects the service life of the hydraulic components. The climate zones are defined in the table on page 1-5. Recommended replacement of hoses is as follows:

- Climate zone C after 8,000 hours of service.
- Climate zones A and C with high ambient temperatures and duty cycles after 4000 to 5000 hours of service.
- Climate zones D and E after 4000 to 5000 hours of service.

Cleanliness

Contaminants in a hydraulic system affects operation and results in serious damage to the system components.



BOOM REMOVAL FROM TRUCK

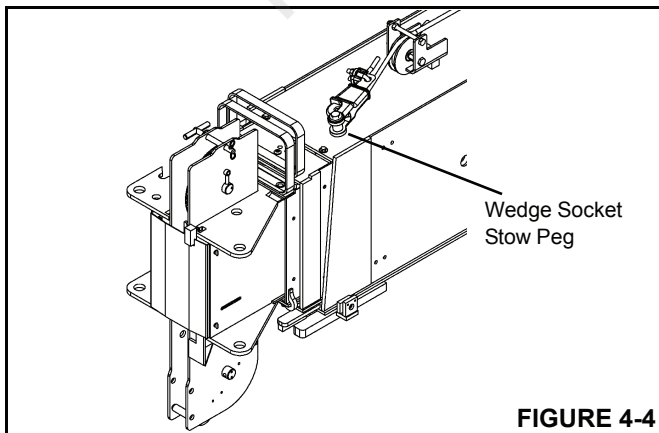
The boom and winch are removed from the truck as one assembly.

Boom Length	Boom Weight*
1369	7220 lb (3275 kg)
13100	8,740 lb (3964 kg)
1369	7,220 lb (3275 kg)
* Includes single winch	

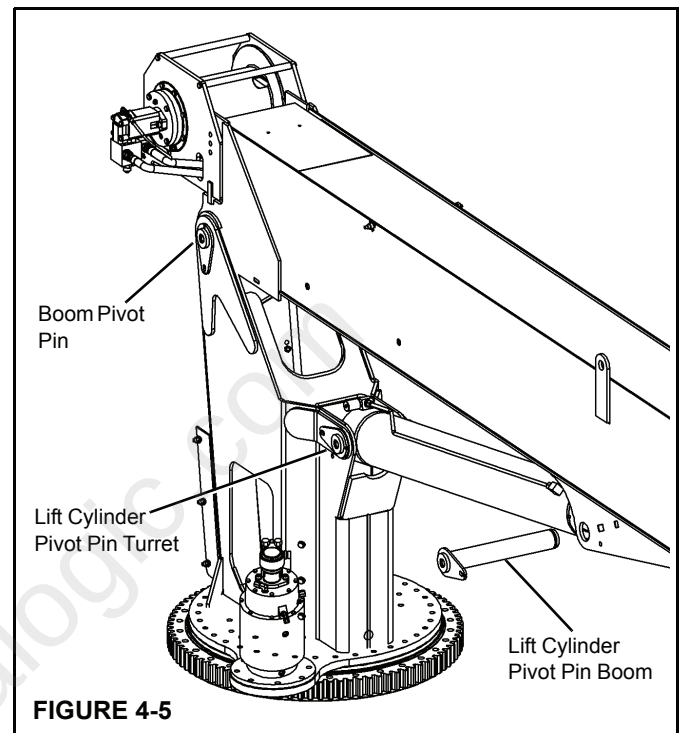
DANGER

Do not, under any circumstances, work at an elevated height without using proper fall protection as required by local, state or federal regulations.

1. Extend and set the outriggers. The boom must be completely retracted and stowed in the boom rest.
2. If equipped, remove swing around jib according to "Section 4, Setup" of the Operator's Manual.



3. Remove the hook block or downhaul weight, wind up the rope on winch drum, and stow the wedge socket on the pegs provided on 1st section (Figure 4-4). Shut down the truck engine.



4. Attach a lifting device to the rod end of the lift cylinder and remove the boom lift cylinder pin keeper and pin from bottom of the 1st section boom (Figure 4-5).
5. Lower lift cylinder to a suitable support.
6. Tag and disconnect the hydraulic lines from the winch and telescope cylinder. Cap all lines and ports.

DANGER

Ensure the lifting device is capable of supporting the boom assembly.

7. Attach a lifting device at the boom CG and raise the boom until the weight is removed from the boom pivot pin. Remove boom pivot pin keeper and pin (Figure 4-5) and lift boom off the turret.

LIFT CYLINDER REMOVAL

1. Tag and disconnect the hydraulic lines attached to the lift cylinder.
2. Attach a lifting device to the lift cylinder.
3. Remove the lift cylinder pivot pin at the turret.
4. Lift the cylinder off the truck.

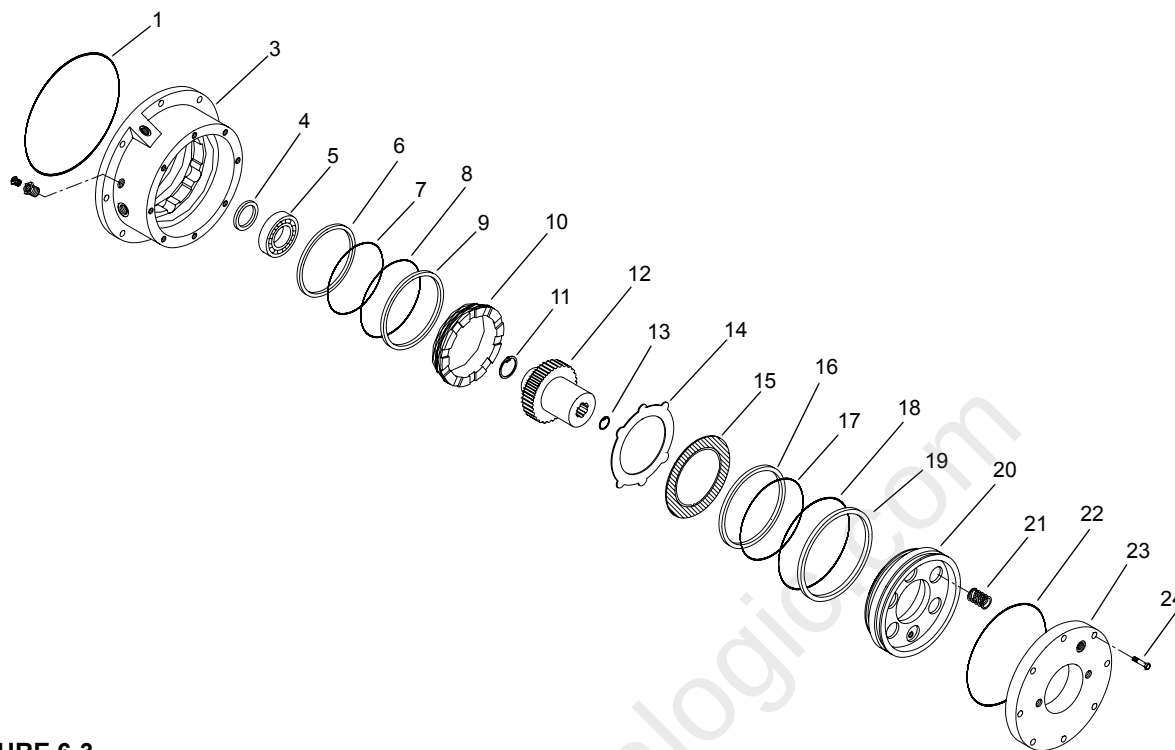


FIGURE 6-3

Item	Component
1	O-ring
3	Housing
4	Seal
5	Bearing
6	Backup Ring
7	O-ring
8	O-ring
9	Backup Ring
10	Brake Piston
11	Retaining Ring
12	Brake Driver
13	Retaining Ring

Item	Component
14	Stator Plates
15	Friction Discs
16	Backup Ring
17	O-ring
18	O-ring
19	Backup Ring
20	Park Brake Piston
21	Springs
22	O-ring
23	Cover
24	Capscrews (8)

Assembly

(See Figure 6-3 for reference numbers.)

Assembly is in reverse order of disassembly with the following additional instructions.

1. Lubricate the sealing lip of the oil seal (4) with the same type of hydraulic oil that the crane uses. Press the oil

seal into the brake housing (3) with the open side of the seal facing the hydraulic motor end of the brake assembly. Install the bearing (5) into the brake housing.

2. If replacing the dynamic brake o-rings (7 and 8), be sure to install the o-rings and their backup rings (6 and 9) in the same order in which they were removed. Lubricate with hydraulic oil to aid assembly.

SECTION 8

LUBRICATION

GENERAL

To ensure a maximum crane lifetime and utilization, follow a designated lubrication procedure. The procedures and lubrication charts in this section include information on the types of lubricants used, the location of the lubrication points, the frequency of lubrication, and other information. Lubrication requirements for the truck chassis are not included here. Refer to appropriate truck manufacturer's manual for this information.

The service intervals specified are for normal operation with moderate temperature, humidity, and atmospheric conditions. In areas of extreme conditions, the service periods and lubrication specifications need to be altered for existing conditions. For information on extreme condition lubrication, contact your local National Crane Distributor or Manitowoc Crane Care.

Arctic Conditions Below -18°C (0°F)

In general, petroleum based fluids developed especially for low temperature service may be used with satisfactory results. However, certain fluids, such as halogenated hydrocarbons, nitro hydrocarbons, and phosphate ester hydraulic fluids, might not be compatible with hydraulic system seals and wear bands. If you are in doubt about the suitability of a specific fluid, check with your authorized Manitowoc distributor or Manitowoc Crane Care.

NOTE: All fluids and lubricants may be purchased by contacting the Manitowoc Crane Care Parts Department.

Regardless of temperature and oil viscosity, always use suitable start-up procedures to ensure adequate lubrication during system warm-up.

Chassis Grease

CAUTION

Do not use air pressure devices to apply chassis grease otherwise damage to sealed fittings may result.

Lubricating grease of proper consistency is to be applied periodically at relatively frequent intervals with grease guns through grease fittings. Minimum apparent viscosity of 300 SUS (Saybolt Universal Seconds) at 100° F (38° C) is recommended.

CAUTION

The multipurpose grease installed during manufacture is of a lithium base. Use of a noncompatible grease could result in damage to equipment.

Extreme Pressure Multipurpose Gear Lubricant

This gear lubricants compounded to achieve high load carrying capacity and meet the requirements of either API-GL-5 or MIL-L-2105C. Unless otherwise specified, SAE 80W-90 viscosity may be used for year round service. Low temperature usage is restricted as follows:

SAE Viscosity Number	Minimum Ambient Temperature F (C)
75W	-40 (-40)
80W	-15 (-26)
85	+10 (-12)
90	+20 (-7)
140	+40 (+5)
250	+50 (+10)

Open Gear Lubricant

This is a special high-graphite adhesive lubricant that helps to eliminate fretting corrosion, is water resistant, and forms a dry lubrication film which does not attract dust. Lubricant meets NLGI Class 1-2 specifications.

Anti-wear Additives

Excessive wear in the system may cause a loss in volumetric efficiency and cause shutdowns for maintenance. An efficient anti-wear oil protects the components against rusting, resists oxidation and helps prevent wear.

Surface Protection for Cylinder Rods

Steel cylinder rods include a thin layer of chrome plating on their surfaces to protect them from corroding. However, chrome plating inherently has cracks in its structure which can allow moisture to corrode the underlying steel. At typical ambient temperatures, hydraulic oil is too thick to penetrate these cracks. Normal machine operating temperatures allow hydraulic oil to warm and penetrate the cracks. If machines are operated daily the rods are protected. Machines that are stored, transported, or used in a corrosive environment (high moisture, rain, snow, or coastline conditions) need to have the exposed rods protected by applying a protectant. Unless

Full Version Available

National Crane 1300A Boom Truck Service Manual

National Crane 1300A boom truck service manual with repair procedures, adjustments and troubleshooting for the main systems. Instant PDF download.

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